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Achilles Tendon Repair Protocol

DISCLAIMER: The following physical therapy protocol is intended to be utilized by the clinician as a guideline in the treatment of this disorder. It is based on current research and has been formulated as a collaborative effort between Physicians and Physical Therapists. It is not intended to serve as a substitute for sound clinical decision making. Every patient is a unique case, and it should be anticipated that not all patients will fit into the timelines set forth in this protocol. If the physical therapist has any questions regarding the course of treatment, the referring physician should be contacted for further guidance

Phase I: Post-Op weeks 0 through 2: Protection Phase

Goals:

- Protect the repair
- Minimize scar tissue formation
- Decrease swelling

Contraindications: NO passive dorsiflexion stretching past initial tendon tension
NO active plantarflexion
NO weightbearing for 2 weeks

Bracing/Assistive Device/Weightbearing

- Non-weightbearing with bilateral crutches for 2 weeks
- Ankle/foot immobilized in splint/hinged brace with 1-1½ inch heel lift (angle, time and heel lift height determined by Dr. Avallone)
- Brace/splint is worn at all times
- 2 weeks: patient removed from splint and placed into walking boot with 3 wedges.

Exercises: Core, hip and knee, foot intrinsic strengthening

- Proximal kinetic chain strengthening program
 - SLRs (hip abd/add/flex/ext)
 - prone hamstring curls in boot
 - Stationary bike in boot
 - Intrinsic strengthening ex's (towel curls, marbles, etc) with heel resting on towel roll
 - Upper body conditioning program

Modalities:

- Edema control (Hi-volt, interferential, cryocuff)
- Cryotherapy to reduce pain and inflammation

Patient Education: Gait, transfer, stair training

Phase II: Post-Op Weeks 3 through 6: Early Weight-Bearing and Initiation of ROM

Goals:

- Initiate guided ROM
- light weight bearing progressing to WBAT
- Initiate tendon lengthening with decreasing wedges

Contraindications:

- No dorsiflexion beyond neutral prior to 7 weeks
- No reciprocal stair negotiation in this phase

Bracing/Assistive Device/Weightbearing:

- As the patient prepares for weight bearing, he/she must have a shoe for the contralateral foot with a heel height equal to the boot and heel lift or use of Evenup shoe lift.
- Light weight bearing with bilateral crutches (25%-50% of total body weight)
- 6 weeks: number of wedges decreased from 3 to 2 within boot,
- 6 weeks: progress to full WBAT with boot no crutches

Exercises:

- Initiate passive weight bearing on surgical leg with boot
- Week 4: Initiate weight acceptance/weight shifting in boot/heel lift in standing
- Week 6: Progress to ambulation in boot without crutches; the heel height on the contra-lateral shoe should equal the height of the boot and heel lift/Evenup shoe lift
- Initiate PROM progressing to AAROM to AROM as tolerated: begin with ankle DF and PF (**avoid ankle DF beyond neutral until 7 weeks**)
- Week 5: progress to inversion and eversion
 - Ankle circles
 - End range isometrics all motions
 - Initial active plantarflexion in prone with the knee flexed
 - Seated BAPS board for all directions avoiding DF beyond neutral

Manual Therapy:

- Gentle scar mobs along Achilles tendon
- Initiate metatarsal/ talocrural joint mobs

Modalities:

- Cryotherapy to reduce pain and inflammation
- Moist heat

Patient Education:

- Reinforce repair protection and the necessity of wearing the boot/lift as directed by Dr. Avallone at ALL times including sleeping and weight bearing. The patient may now sit without the boot on for comfort

Phase III: post-op week: 7 through 8 (advance ROM and strengthening)

Goal:

- to achieve full passive and active ROM while initiating strengthening and stretching movements

Precaution: avoid Achilles tendon stretching beyond point of tension

Bracing/Assistive Device/Weightbearing:

- At 8 weeks: number of wedges decrease from 2 to 1 within boot

Exercises:

- Initiate sub-maximal isotonic (manual PRE's) ankle dorsiflexion, plantarflexion and eversion
- Initiate theraband strengthening all directions: Stress plantarflexion end range strengthening
- Dynamic stabilization at end range motions
- PRE's PF/DF with knee flexed to 90
- Leg press calf raise with heel supported on $\frac{3}{4}$ " lift
- Stationary bike out of boot with minimal to no resistance
- Aquatic therapy

Manual Therapy:

- continue previous scar mobilization
- metatarsal / Talocrural joint mobs prn

Modalities:

- continue edema control

Patient Education:

- Home exercise program development

Phase IV: Post-op week 9 through 11

Goal:

- To advance strengthening exercises
- Normalize gait

Precautions: Avoid achilles tendon stretching beyond point of tension

Bracing/Assistive Device/Weightbearing:

- 10 weeks: final wedge removed from boot

Exercises:

- Progress concentric exercises all 4 planes
- Stress plantarflexion end range strengthening
- Isokinetics (if available)
- Eccentric plantarflexion end range strengthening
- End range dynamic stabilization all motions
- Leg press with boot
- Leg press calf raises; begin with foot on plate at neutral
- PRE's PF/DF with knee flexed to 90 with knee extended
- Seated heel raise

Patient Education:

- Home exercise program development

Manual Therapy:

- Gentle scar mobs along Achilles tendon
- Talocrural/metatarsal mobilizations

Phase V: Post-op week 12 through 17 (Normalize ambulation)

Goal:

- Restore normal gait
- Continue to progress gastroc/soleus strength
- Restore dynamic stability ankle, knee and hip

Precaution: Avoid achilles tendon stretching beyond tension

Bracing/Assistive Device/Weightbearing:

- 12 weeks: boot discharged to sneaker + 1 lift
- 16 weeks: discharge lift in shoe

Exercises:

- Gait training: patient will likely ambulate with decreased push off
 - Treadmill (forward and retro)
 - Marching
 - Lateral walking
 - Alter G program

- 12 weeks: Begin Heel raise progression : standard bilateral heel raises on level surfaces (***see attachment for details***)
- Initiate/progress Single limb balance activities
- initiate step ups and step downs(4 inch step)
- Week 15: walk/Jog progression in alter G beginning at 75% body weight (or level where there is no gait deviations)
- initiate low effect aerobic exercises
 - Paced walking (if no gait deviations)
 - Elliptical machine
 - Stair climber

Criteria to advance:

- Adequate strength base shown by ability to perform 10 unilateral heel raises
- Normal gait pattern
- MMT grade of 5/5 for dorsiflexion, inversion, eversion
- Symmetrical lower extremity balance

Phase VI: Post-op 18 weeks to discharge: Return to Activity

RTA: defined as initiation of patient sport or main daily activity, not return to full training¹

Criteria:

1. Ability to perform 5 sets of 25 single -legged heel raises
2. Calf circumference equals 5 MM or less difference measured 10 cm distal to the tibial tuberosity of the operative limb as compared with the non-operative limb

Goal: for patient to return to prior to surgery activity level without deviation, pain or limitation of daily function

Exercises:

- Progress proximal joint strength/stabilization
- Bapps board progression, Fitter
- Walk/Jog progression in alter G to 85-90% body weight (if no limp)
- Hopping/Jump progression:
 - Leg press single limb hopping; landing on forefoot
 - Trampoline bouncing progressing to hopping
 - Bilateral mini hops
- Week 20:
 - Unilateral mini hops
 - Initiate plyometrics
 - Initiate running
 - agility drills: figure 8's, karaokes, shuffles

- Forward, lateral step overs (on box)
- Resume regular biking
- plyometrics
- Progress stepdowns

Phase VII: Post-op 9-12 months: Return to sport Protocol

Goal: for athlete to return the dynamic stabilizers of the ankle to full strength and endurance

Exercises: return to play protocol

Criteria for discharge:

- Flexibility and strength to accepted levels for sports performance
- Lack of apprehension with sport-specific movements
- 85% limb symmetry with vertical jump test
- 85% limb symmetry for average peak isokinetic torque (PF/DF/INV/EV)
- Independent performance of gym/home exercise program

1. Saxona A, Ewen B, Maffulli N. Rehabilitation of the Operated Achilles Tendon: Parameters for Predicting Return to Activity. *J Foot Ankle Surg.* 2011;50 (37-40)
2. Wang K, Cotter E, Cole B, Lin J. Rehabilitation and Return to Play Following Achilles Tendon Repair. *Oper Tech Sports Med.* 2017; 25 (214-219)
3. Achilles Tendon repair Surgery Post Operative Instructions. Massachusetts General Hospital. Access 1/15/20.
<https://www.massgeneral.org/assets/MGH/pdf/orthopaedics/sports-medicine/physical-therapy/rehabilitation-protocol-for-achilles-repair.pdf>

Toe Raising Progression for Achilles Tendon Repair: Start at 12 weeks

Phase 1:

Frequency: Daily
Times per day: 3
Repetitions: 20
Technique: up and down both legs together
Duration: 2-4 weeks

Phase 2:

Frequency: 5 days per week: 2 days on, 1 day off
Times per day: 1-2
Repetitions/Technique: Up and down both legs together, 10 x
Up both legs down on affected leg, 10 x
Up and down both legs together, 10 x
Duration: 2 weeks

Phase 3:

Frequency: 5 days per week: 2 days on, 1 day off
Times per day: 1-2
Repetitions/Technique: Up and down both legs together, 10 x
Up both legs down on affected leg, 10 x, 2 sets
Up and down both legs together, 10 x
Duration: 2 weeks

Phase 4:

Frequency: 5 days per week: 2 days on, 1 day off
Times per day: 1
Repetitions/Technique: Up and down both legs together, 10 x
Up both legs and down on affected leg, 10 x
Up and down the affected leg only, 10 x
Up and down both legs together, 10 x
Duration: 2 weeks

Phase 5:

Frequency: 4 days per week: 2 days on, 2 day off
Times per day: 1
Repetitions/Technique: Up and down both legs together, 10 x
Up both legs and down on affected leg, 10 x
Up and down the affected leg only, 10 x, 2 sets
Up and down both legs together, 10 x

Phase 6:

Frequency: 3-4 days per week: 1 day on, 1 day off
Times per day: 1
Repetitions/Technique: Up and down both legs together, 10 x
Up both legs and down on affected leg, 10 x
Up and down the affected leg only, 10 x, 3 sets
Up and down both legs together, 10 x
Duration: 1 month

Phase 7:

Gradual return to sports activity